Stereo-lithographic powder processing to make objects including tools, prototypes and molds employs vacuum processing- and storage chambers with window admitting energetic radiation

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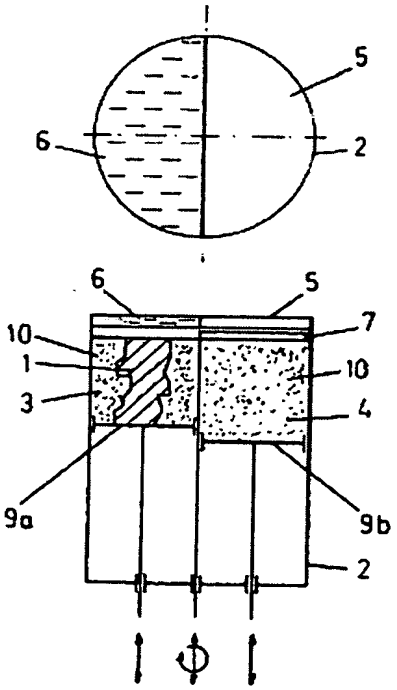
Abstract of **DE19952998**

A vacuum processing chamber (2) integrates two or more part-chambers. The first (3) is for construction, the second (4) for powder storage. The cover (5) is fixed, or moves, with respect to the processing chamber. Its window (6) allows introduction of energetic radiation. There is a scraper (not shown) high in the chamber, passing over the cross sections of the part-chambers. Bases (9) of the part chambers move relative to the cover plate. Above the window there is an energetic radiation transmitter, detector or controller. Moving components are each coupled to a drive. An Independent claim is included for the method, which forms objects by layered construction from powders, using a vacuum and heat source, with an energetic radiation transmitter. Vacuum dries the powder, preventing chemical reaction. Non-porous layers are produced, assisting thermal conduction from construction- to the processing chamber. An additional heat source may be used for tempering of the construction chamber and to dry the powder. Preferably, tempering is at 600 deg C - 800 deg C. (The foregoing are claimed as uses). Preferred features: A moving cover plate (7) closes part chambers in alternation. At one edge it has a scraper (added or integral). The processing chamber is circular in cross section. A variant of the design is described containing four sectors forming partial chambers. Further variants are detailed with various cross sections and minor modifications. A gas supply is connected to the processing chamber. Vent openings are



provided in the second partial chamber and/or moving cover. Their size retains particles and/or porous sintered or -pressed material is held in the openings. The upper plates are coated with powder-repellent material.